

LISTING OF THE CLAIMS

The following listing, if entered, replaces all prior versions of the claims in the present application.

1. (Currently Amended) A virtual switch, the virtual switch comprising:

a master distribution switch chassis comprising:

a first plurality of linecards;

a master supervisor card for controlling the first plurality of linecards

a first master distribution switch port configured for communication with a slave distribution switch chassis over a virtual switch link, wherein the master distribution switch chassis and the slave distribution switch chassis communicate one or more media access control (MAC) notification frames according to a virtual switch link protocol over the virtual switch link ~~according to a virtual switch link protocol for logically extending a data plane of the master distribution switch chassis to that of the slave distribution switch chassis;~~

a second master distribution switch port configured to communicate with a first satellite switch; and

a third master distribution switch port configured to communicate with core switches; and

a slave distribution switch chassis, coupled to the master distribution switch chassis by the virtual switch link and under the control of the master supervisor card, the slave distribution switch chassis comprising:

a second plurality of linecards;

a slave supervisor card;

a first slave distribution switch port configured for communication with the master distribution switch chassis over the virtual switch link;

a second slave distribution switch port configured to communicate with a second satellite switch; and

a third slave distribution switch port configured to communicate with core switches.

2. (Canceled)
3. (Original) The virtual switch of claim 1, wherein the virtual switch link comprises a control virtual switch link and a data virtual switch link.
- 4.(Original) The virtual switch of claim 1, wherein the virtual switch link comprises a plurality of physical links combined to form a logical link.
5. (Previously Presented) The virtual switch of claim 1, wherein a packet header according to the virtual switch link protocol comprises a field indicating whether a packet has traversed the virtual switch link.
6. (Previously Presented) The virtual switch of claim 1, wherein the virtual switch link is used to synchronize routing tables of the master distribution switch chassis and the slave distribution switch chassis.
7. (Previously Presented) The virtual switch of claim 3, wherein the control virtual switch link extends an internal Out-of-Band Channel to communicate between the master distribution switch chassis and the slave distribution switch chassis.
8. (Previously Presented) The virtual switch of claim 3, wherein the data virtual switch link extends an internal chassis data plane to communication between the master distribution switch chassis and the slave distribution switch chassis.
9. (Original) The virtual switch of claim 3, wherein the master supervisor communicates with the slave supervisor via inband messaging on the control virtual switch link.
10. (Previously Presented) The virtual switch of claim 3, wherein the control virtual switch link is brought on-line first and is used to determine which chassis will be the master distribution switch chassis.
11. (Original) The virtual switch of claim 3, wherein a single physical link combines the control virtual switch link and the data virtual switch link.

12. (Original) The virtual switch of claim 3, wherein the control virtual switch link and the data virtual switch link are formed from separate physical links.

13. (Cancelled).

14. (Currently Amended) A method of forming a virtual switch from a plurality of physical switches in a network, the method comprising:

configuring a first physical switch as a master switch for controlling the virtual switch;

configuring a second physical switch as a slave switch under the control of the master switch, wherein the first physical switch and the second physical switch are redundant backups acting as distribution switches in a network;

forming a virtual switch link for communication between the master switch and the slave switch;

causing the master switch and the slave switch to communicate via a virtual switch link protocol;

~~extending a first data plane of the master switch to include a second data plane of~~

~~the slave switch according to communication~~ communicating a MAC notification frame between the master switch and the slave switch via the

virtual switch link according to the virtual switch link protocol; and

causing the master switch and the slave switch to act as a single virtual switch when interacting with an access layer satellite switch coupled to both the master switch and the slave switch, wherein the virtual switch is configured to include a destination port.

15. (Previously Presented) The method of claim 14, wherein a packet header according to the virtual switch link protocol comprises a source port identifier.

16. (Previously Presented) The method of claim 14, wherein a packet header according to the virtual switch link protocol comprises a destination port index.

17. (Previously Presented) The method of claim 14, wherein a packet header according to the virtual switch link protocol comprises source flood information.

18. (Previously Presented) The method of claim 14, wherein a packet header according to the virtual switch link protocol comprises VLAN information.

19. (Previously Presented) The method of claim 14, wherein the virtual switch link protocol is used by the first and second physical switches to indicate whether an access control list should be applied to a frame.

20. (Previously Presented) The method of claim 14, wherein the virtual switch link protocol is used by the first and second physical switches to indicate whether a QoS designation should be applied to a frame.

21. (Currently Amended) The method of claim 14, wherein the virtual switch link protocol is used by the first and second physical switches to indicate whether a frame is [[a]] the MAC notification frame.

22. (Previously Presented) The method of claim 14, wherein a packet header according to the virtual switch link protocol comprises data plane priority information for a frame.

23. (Canceled)

24. (Original) The method of claim 14, further comprising forming the virtual switch link from a plurality of physical links acting as a single logical link.

25. (Previously Presented) The method of claim 14, further comprising forming the virtual switch link to include a data virtual switch link and a physically separate control virtual switch link.

26. (Original) The method of claim 14, further comprising:
updating layer 2 forwarding tables in the master chassis;
updating layer 2 forwarding tables in the slave chassis; and
correcting inconsistencies between the layer 2 forwarding tables in the master chassis and the layer 2 forwarding tables in the slave chassis.

27. (Previously Presented) The method of claim 14 wherein the step of forming the virtual switch link comprises combining a data virtual switch link and a control virtual switch link on a single physical link.

28. (Original) The method of claim 25, further comprising:
 updating layer 2 forwarding tables in the master chassis;
 updating layer 2 forwarding tables in the slave chassis; and
 correcting inconsistencies between the layer 2 forwarding tables in the master chassis and the layer 2 forwarding tables in the slave chassis according to frames transmitted on the data virtual switch link.

29. (Canceled)

30. (Currently Amended) An apparatus for forming a virtual switch from a plurality of physical switches in a distribution layer or a core layer of a network, the apparatus comprising:

means for configuring a first physical switch as a master switch for controlling the virtual switch;

means for configuring a second physical switch as a slave switch under the control of the master switch, wherein the first physical switch and the second physical switch are redundant backups acting as distribution switches in a network;

means for forming a virtual switch link for communication between the master switch and the slave switch;

means for causing the master switch and the slave switch to communicate one or more MAC notification frames according to a virtual switch link protocol over the virtual switch link ~~via a virtual switch link protocol, wherein the virtual switch link protocol extends a first data plane of the master switch to include a second data plane of the slave switch;~~ and

means for causing the master switch and the slave switch to act as a single virtual switch when interacting with an access layer satellite switch.

31. (Currently Amended) ~~A computer-readable storage medium having encoded thereon a plurality of computer-executable instructions~~ program embodied in a machine-readable medium, the computer program containing instructions for controlling a plurality of physical switches of a network to perform the following steps:

configuring a first physical switch as a master switch for controlling a virtual switch;

configuring a second physical switch as a slave switch under the control of the master switch, wherein the first physical switch and the second physical switch are redundant backups acting as distribution switches in a network; forming a virtual switch link for communication between the master switch and the slave switch;

causing the master switch and the slave switch to communicate via a virtual switch link protocol;

~~extending a first data plane of the master switch to include a second data plane of the slave switch according to communication~~ communicating a MAC notification frame between the master switch and the slave switch via the virtual switch link according to the virtual switch link protocol; and causing the master switch and the slave switch to act as a single virtual switch when interacting with ~~to~~ an access layer satellite switch.

32. (Canceled)

33. (Withdrawn) A method of initializing a virtual network device, comprising: performing a handshake sequence between a first chassis and a second chassis, the first chassis and the second chassis being redundant network devices of a data network; and determining whether the first chassis or the second chassis will be a master chassis for controlling a virtual network device comprising the first chassis and the second chassis.

34. (Withdrawn) The method of claim 33, wherein the handshake sequence includes exchanging information selected from the group consisting of a hardware version of a supervisor; a chassis identifier; a chassis number; a software version of each

supervisor in a chassis; hardware values for a slot in a chassis; and a slot/port of a remote endpoint for a particular link between the first chassis and the second chassis.

35. (Withdrawn) The method of claim 33, further comprising the step of forming a control virtual switch link of the virtual network device according to information exchanged during the handshake sequence.

36. (Withdrawn) The method of claim 35, further comprising the step of ascertaining whether a physical link that will become a data virtual switch link is connected to both the first chassis and the second chassis.

37. (Withdrawn) The method of claim 36, further comprising the step of forming a data virtual switch link of the virtual network device if the ascertaining step indicated that the physical link was connected to both the first chassis and the second chassis.